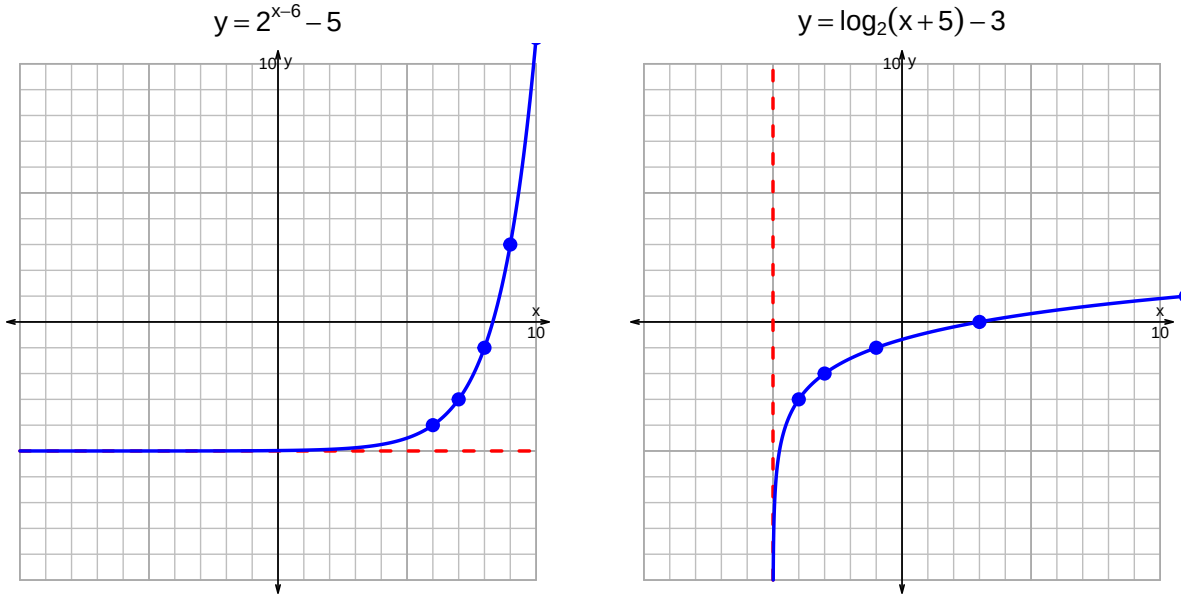
Name: Date:

s18quiz: EXP LOG (Solution v121)

1. Graph $y = 2^{x-6} - 5$ and $y = \log_2(x+5) - 3$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$13 = \left(\frac{3}{4}\right) \cdot 10^{-5t/7}$$

Divide both sides by $\frac{3}{4}$.

$$\frac{13 \cdot 4}{3} = 10^{-5t/7}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{13 \cdot 4}{3}\right) = \frac{-5t}{7}$$

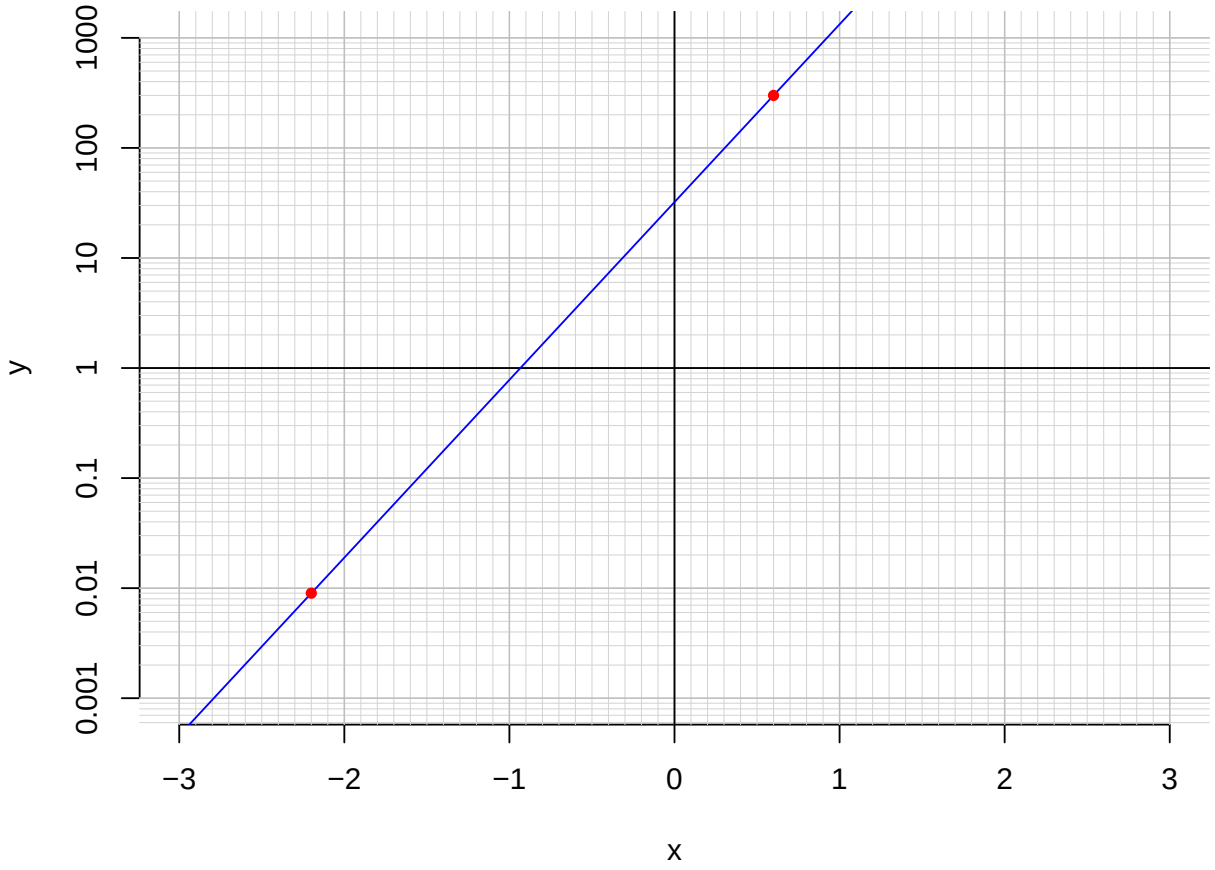
Divide both sides by $\frac{-5}{7}$.

$$\frac{-7}{5} \cdot \log_{10}\left(\frac{13 \cdot 4}{3}\right) = t$$

Switch sides.

$$t = \frac{-7}{5} \cdot \log_{10}\left(\frac{13 \cdot 4}{3}\right)$$

3. An exponential function $f(x) = 32.2 \cdot e^{3.72x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(0.6)$.

$$f(0.6) = 300$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{3.72} \cdot \ln\left(\frac{x}{32.2}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.009)$.

$$f^{-1}(0.009) = -2.2$$